ERRORS IN BALANCING

A Concise Hand-book dealing with the more usual causes of differences in Trial Balances, and the method of their Detection.

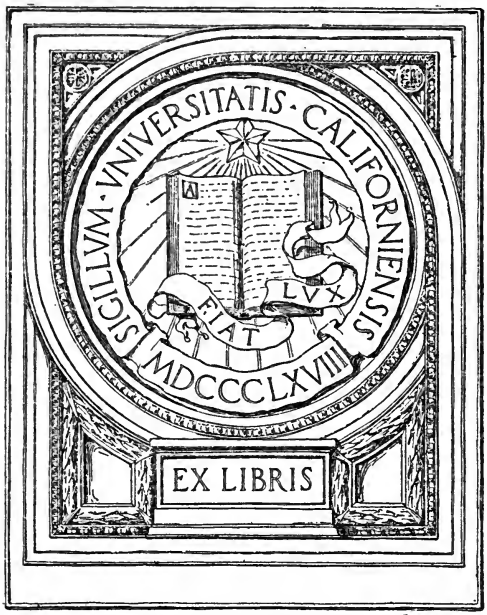
BASED ON ARTICLES WHICH HAVE APPEARED IN *THE ACCOUNTANT.*

Price 2s. 6d.
NET.

FOURTH EDITION.

LONDON:
GEE & CO. (PUBLISHERS) LTD., 14 QUEEN VICTORIA STREET, E.C.4.

1920.



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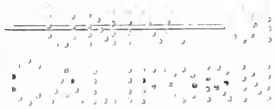

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ERRORS IN BALANCING.

Preliminary.

IN spite of the extreme importance of arriving at an exact balance of books which in any way pretend to be properly kept, and notwithstanding the fact that much time of both bookkeepers and auditors is frequently expended upon the discovery of errors in balancing, it is not a little singular that there exists at the present time no published work that professes to deal with the matter from a practical point of view. It is true that a short handbook upon the subject was published about half a century ago, but this work has long been out of print, and can hardly be said to have more than touched upon the subject in question. It is therefore thought that considerable interest will attach

to the rules and explanations contained in this pamphlet.

Importance of Subject to Accountants.

It may, at first sight, appear that the matter is one which hardly interests the professional accountant, inasmuch as the auditor is not supposed to commence his duties until the Trial Balance has been completed, and the draft Balance Sheet and Profit and Loss Account prepared. However desirable such a practice may be in theory, it is not, however, always carried out in its entirety, especially in the case of the audit of the accounts of private firms. Moreover, as secretaries of public companies, accountants frequently occupy the position of bookkeeper, and are thus directly interested in the subject now under discussion.

Systems for Localising Errors.

The first step in the direction of discovering errors in balancing is one that should really have been taken into consideration before the books were commenced, seeing that it consists entirely of the

system upon which the accounts are to be framed. Where the transactions are not numerous and the number of accounts comparatively few, this is, of course, a point which has but little practical importance: but even in a concern of quite moderate size it is of the greatest possible advantage to be in a position to *localise* any error which may appear on the face of the Trial Balance. Any system of accounts worth the name ought really to be so framed that in the event of there being an error in the Trial Balance it may be readily discovered in which of the various Ledgers the error exists; and it ought, further, to be equally easy to perceive whether the mistake has occurred upon the debit side or upon the credit side, or partly on each. For this purpose it becomes necessary to provide each Ledger with an Adjustment Account, to which is posted from month to month the totals of the various amounts entered in the Ledger itself. If this has been done, and the *totals* of the various Ledger Accounts are extracted, instead of merely preparing a list of the *balances* of such accounts, it will be obvious that the aggregate of the totals of the various accounts in any one Ledger should agree with the totals shown upon the corresponding Adjustment Account; while, in the event of their not agreeing, it can readily be seen whether the mistake has occurred upon the

Dr. side or upon the *Cr.* side, or partly on each. The system also possesses the further advantage of providing the best possible test of the accuracy of the Ledger postings short of calling back those postings in detail, while the fact that the totals have to agree—and not merely the balances—renders it impossible for any cross-entry to have been made which has not been passed through the ordinary channels, and thus the risk of unauthorised transfers from one Ledger Account to another is practically eliminated.

It is not proposed to describe the working of Adjustment Accounts in detail in the present work, as that has already been adequately considered by previous writers, but those who wish for further information upon the matter are referred to Mr. G. P. Norton's "Balancing for Expert Bookkeepers," and Prof. Dicksee's "Bookkeeping for Accountant Students," in each of which works the matter is very fully and clearly described.

Causes of Specific Errors.

It is now proposed to deal with the probable causes of certain specific errors of a definite

amount. In considering this point it is desirable to remember that not a little depends upon the individual idiosyncrasies of the particular bookkeeper who has had charge of the books. Thus, many bookkeepers are particularly prone to such errors of addition as carrying 1, when, in point of fact, there is nothing to be carried—a mistake which may, of course, affect the balancing of the books by either 1/-, 10/-, £1, £10, or upwards. Again, some bookkeepers add up the pence by simple addition and reduce the totals to shillings and pence afterwards, while others reduce the pence to shillings as they proceed with the actual addition. Those who adopt the latter method will be peculiarly liable to mistakes of one shilling, or even shillings; whereas those adopting the former will be more prone to mistakes of 10d., or multiples of 10d. The same remarks apply, to a certain extent, to those who are in the habit of converting shillings into pounds as they add them; but this is a more unusual course to adopt.

Figures Badly Placed.

Another most fruitful cause of errors in addition arises from the figures being badly placed. Figures

should always be placed so that the units are under the units, the tens under the tens, and so on. Where, through carelessness, or ignorance, units are placed under the tens, it is probable, in adding, that they will be included both in the units and in the tens. On the other hand, it is possible that they may be included in the tens and not in the units. To take an example—if, in a column of figures, £8 is placed under the tens it may either be added up as £8 *and* as £80 (causing an error of £80), or it may be added up as £80, causing an error of £72.

Indistinct Figures.

Other mistakes arise from the adoption of indistinct figures—thus, 3's may sometimes be mistaken for 5's and *vice versa*, while 4's may be mistaken for 11's or 7's, and *vice versa*; 6's, by a similar process, may be taken for 8's, or even 0's, and *vice versa*, and 0's and 9's may also be confused. An exceptionally curly 7 may also be taken for a 9. Such errors as these are hardly, however, likely to occur unless the additions or postings (as the case may be) have not been made by the person who made the original entries, for, in the absence

of extreme carelessness, it is to be assumed that a man can always read his own figures: but it is quite another matter when they are added by another person, and the mere fact that the latter is quick at additions increases, rather than decreases, the chances of a mistake. Another fruitful cause of error in additions—especially errors of 10d. or 10/—is to be found in the exceptionally long tails which some writers give to their 7's and 9's. Errors of this kind, however, are seldom met with, unless the writer slopes his figures more than is usual among Britishers at the present day.

Errors in Copying Figures.

Having now dealt shortly with errors in addition, there remain to be dealt with those errors which arise from what may be called inaccurate memory, as, for instance, when a total at the foot of one page is to be carried forward to the top of the next page, or when a posting is to be made into the Ledger, or when a balance is extracted from a Ledger.

Classes of Errors in Copying.

Experience has shown that errors of this class fall under the following categories :—

I. Figures advanced from left to right, or *vice versa* ; as, for example, when 11/- is entered as £11, causing an error of £10 9/-

II. Figures transposed ; as, for example, when 11/9 is entered as 9/11, causing an error of 1/10.

The number of possible errors which may thus be produced resulting in differences of sums under £1,000 is enormous, and it is therefore obviously impossible to discuss the matter at such length. It is proposed to deal with all simple errors up to £100, and to explain the rules by which their causes may be found.

Complex Errors.

It is, however, important to bear in mind that a mere difference in balancing by no means necessarily

implies that the explanation of this difference is to be sought in one single error. When the exact difference actually corresponds with one of the figures shown in the following tables, the balance of probability may be in favour of the error being caused in the manner thus indicated: but it may readily happen that any given difference in the Trial Balance is the result of two or more mistakes in posting, carrying forward of additions, or actual addition; and its cause must, therefore, be sought under each of these heads. There is, of course, no royal road by which all mistakes in balancing may be rectified in a few seconds: the object of this pamphlet is merely to show the most usual combinations of errors which will account for certain stated differences. The rest must perforce be left to the experience and good sense of the reader.

Errors of Advancement.

Dealing first with Group I*, errors of the most simple kind are grouped together in Table A, and the rule for discovering the cause of such errors is as follows:—

**Vide* page 10.

Rule A.

Suppose, for instance, the difference in the balance amounts to 9/11 : first write down the amount of the mistake, place over the pence such a sum as with the pence of the error will make 1/-, and place a similar amount under the shillings, thus :—

s	d
	1
9	**11**
1	0

It will be seen that the first two sums (1d. and 9/11) add up to the third, so far as the pence are concerned, but not (as yet) so far as the shillings are concerned. To make the shillings add we must place 1 over the 9, and because we do so the rule requires us to also place 1 to the left of the 1/- in the lowest set of figures, thus :—

s	d
1	1
9	**11**
11	0

It will be found that the difference between 1/1

and 11/- is 9/11, and that consequently an error of 9/11 may be caused either by posting or carrying forward 11/- as 1/1, or *vice versa*.

Taking as a further example a difference of a larger amount, viz., £33 4s. 1d., pursue the same rule. The sum to be added to 1d. to make 1/- is 11d.; 11d. must therefore be placed over the 1d. in the pence column and 11/- under the 4/- in the shillings column. The sum to be added to 4/1 and 11d. in order to make 11/- is 6/-; 6 must therefore be placed above the 4/- and under the £3. The amount to be added to £3 to make £6 is £3; 3 must therefore be placed above the units of the £'s and below the tens of the £'s. This gives two new sets of figures, namely, £3 6s. 11d. and £36 11s., and if either of these be entered in the book where the other one ought to have been entered the result is an error of £33 4s. 1d. Thus :—

£	s	d
3	6	11
33	**4**	**1**
36	11	0

The following is a list of differences in balancing which may arise from simple errors of advancement (or "shifts") :—

TABLE A.

£	s	d	£	s	d	£	s	d	£	s	d	£	s	d	£	s	d	£	s	d	£	s	d
	9	2	3	0	8	5	18	7	8	17	5	11	5	4	12	13	5	13	18	8	15	5	10	16	12	2
	9	11	3	1	7	6	0	5	8	18	4	11	6	3	12	14	4	13	19	7	15	6	9	16	12	11
	10	1	3	2	6	6	1	4	9	0	2	11	7	2	12	15	3	14	0	6	15	7	8	16	13	1
	11	9	3	3	5	6	2	3	9	1	1	11	8	1	12	16	0	14	1	5	15	8	7	16	13	10
	12	8	3	4	4	6	3	2	9	10	11	11	8	11	12	16	2	14	2	4	15	9	6	16	14	9
	13	7	3	5	3	6	4	1	9	11	10	11	9	10	12	16	11	14	3	3	15	10	5	16	15	8
	14	6	3	6	2	6	13	11	9	12	9	11	10	9	12	17	1	14	4	2	15	11	4	16	16	7
	15	5	3	7	1	6	14	10	9	13	8	11	11	8	12	17	10	14	5	1	15	12	3	16	17	6
	16	4	3	16	11	6	15	9	9	14	7	11	12	7	12	18	9	14	5	11	15	13	0	16	18	5
	17	3	3	17	10	6	16	8	9	15	6	11	13	6	12	19	8	14	6	10	15	13	2	16	19	4
1	0	10	3	18	9	6	17	7	9	16	5	11	14	5	13	0	7	14	7	9	15	13	11	17	0	3
1	1	9	4	0	7	6	18	6	9	17	4	11	15	4	13	1	6	14	8	8	15	14	1	17	1	2
1	2	8	4	1	6	7	0	4	9	18	3	11	16	3	13	2	5	14	9	7	15	14	10	17	2	1
1	3	7	4	2	5	7	1	3	9	19	11	11	17	0	13	3	4	14	10	6	15	15	9	17	2	11
1	4	6	4	3	4	7	2	2	10	0	1	11	17	2	13	4	3	14	11	5	15	16	8	17	3	10
1	5	5	4	4	3	7	3	1	10	0	10	11	17	11	13	5	2	14	12	4	15	17	7	17	4	9
1	6	4	4	5	2	7	12	11	10	1	9	11	18	1	13	6	1	14	13	3	15	18	6	17	5	8
1	7	3	4	6	1	7	13	10	10	2	8	11	19	9	13	6	11	14	14	0	15	19	5	17	6	7
1	8	2	4	15	11	7	14	9	10	3	7	12	0	8	13	7	10	14	14	2	16	0	4	17	7	6
1	9	1	4	16	10	7	15	8	10	4	6	12	1	7	13	8	9	14	14	11	16	1	3	17	8	5
1	18	11	4	17	9	7	16	7	10	5	5	12	2	6	13	9	8	14	15	1	16	2	2	17	9	4
2	0	9	4	18	8	7	17	6	10	6	4	12	3	5	13	10	7	14	15	10	16	3	1	17	10	3
2	1	8	5	0	6	7	18	5	10	7	3	12	4	4	13	11	6	14	16	9	16	3	11	17	11	0
2	2	7	5	1	5	8	0	3	10	8	2	12	5	3	13	12	5	14	17	8	16	4	10	17	11	2
2	3	6	5	2	4	8	1	2	10	9	1	12	6	2	13	13	4	14	18	7	16	5	9	17	11	11
2	4	5	5	3	3	8	2	1	10	18	0	12	7	1	13	14	3	14	19	6	16	6	8	17	12	1
2	5	4	5	4	2	8	11	11	10	19	10	12	7	11	13	15	0	15	0	5	16	7	7	17	12	10
2	6	3	5	5	1	8	12	10	11	0	9	12	8	10	13	15	2	15	1	4	16	8	6	17	13	9
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2	8	1	5	15	10	8	14	8	11	2	7	12	10	8	13	16	1	15	3	2	16	10	4	17	15	7
2	17	11	5	16	9	8	15	7	11	3	6	12	11	7	13	16	10	15	4	1	16	11	3	17	16	6
2	18	10	5	17	8	8	16	6	11	4	5	12	12	6	13	17	9	15	4	11	16	12	0	17	17	5

17	18	4	20	4	5	23	2	4	25	18	5	29	2	7	32	0	6	34	16	7	38	0	9	40	17	9
17	19	3	20	5	4	23	3	3	25	19	4	29	3	6	32	1	5	34	17	6	38	1	8	40	18	8
18	0	2	20	6	3	23	4	2	26	0	3	29	4	5	32	2	4	34	18	5	38	2	7	40	19	7
18	0	11	20	7	2	23	5	1	26	1	2	29	5	4	32	3	3	34	19	4	38	3	6	41	0	6
18	1	0	20	8	1	23	14	0	26	2	1	29	6	3	32	4	2	35	0	3	38	4	5	41	1	5
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18	1	10	20	18	10	23	15	10	26	11	11	29	8	1	32	14	0	35	2	1	38	6	3	41	3	3
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18	3	8	21	2	6	23	19	6	26	15	7	30	0	8	32	17	8	35	13	9	38	17	11	41	14	11
18	3	9	21	3	5	24	0	5	26	16	6	30	1	7	32	18	7	35	14	8	38	18	10	41	16	9
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18	4	8	21	5	3	24	2	3	26	18	4	30	3	5	33	0	5	35	16	6	39	0	8	41	18	7
18	5	6	21	6	2	24	3	2	26	19	3	30	4	4	33	1	4	35	17	5	39	1	7	41	19	6
18	5	7	21	7	1	24	4	1	27	0	2	30	5	3	33	2	3	35	18	4	39	2	6	42	0	5
18	6	5	21	16	0	24	13	0	27	0	11	30	6	2	33	3	2	35	19	3	39	3	5	42	1	4
18	6	6	21	16	11	24	13	11	27	1	1	30	7	1	33	4	1	36	0	2	39	4	4	42	2	3
18	7	4	21	18	9	24	14	10	27	1	10	30	16	0	33	13	0	36	0	11	39	5	3	42	3	2
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18	9	3	22	3	4	24	19	5	27	6	5	31	0	7	33	17	7	36	4	7	39	18	9	42	15	9
18	10	1	22	4	3	25	0	4	27	7	4	31	1	6	33	18	6	36	5	6	39	19	8	42	16	8
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19	18	11	22	16	10	25	12	11	28	9	1	31	6	1	34	3	1	36	10	1	40	4	3	43	1	3
19	19	10	22	17	9	25	13	10	28	18	0	31	15	0	34	12	0	37	8	2	40	5	2	43	2	2
20	0	9	22	18	8	25	14	9	28	18	11	31	15	11	34	12	11	37	9	1	40	6	1	43	3	1
20	1	8	22	19	7	25	15	8	28	19	10	31	17	9	34	13	10	37	18	0	40	15	0	43	12	0
20	2	7	23	0	6	25	16	7	29	0	9	31	18	8	34	14	9	37	18	11	40	15	11	43	12	11
20	3	6	23	1	5	25	17	6	29	1	8	31	19	7	34	15	8	37	19	10	40	16	10	43	13	10

TABLE A (*continued*).

£	s	d	£	s	d	£	s	d	£	s	d	£	s	d	£	s	d	£	s	d
43	14	9	47	0	9	49	18	8	52	16	7	55	19	10	58	17	9	61	15	8	65	0	9	67	18	8
43	15	8	47	1	8	49	19	7	52	17	6	56	0	9	58	18	8	61	16	7	65	1	8	67	19	7
43	16	7	47	2	7	50	0	6	52	18	5	56	1	8	58	19	7	61	17	6	65	2	7	68	0	6
43	17	6	47	3	6	50	1	5	52	19	4	56	2	7	59	0	6	61	18	5	65	3	6	68	1	5
43	18	5	47	4	5	50	2	4	53	0	3	56	3	6	59	1	5	61	19	4	65	4	5	68	2	4
43	19	4	47	5	4	50	3	3	53	1	2	56	4	5	59	2	4	62	0	3	65	5	4	68	3	3
44	0	3	47	6	3	50	4	2	53	2	1	56	5	4	59	3	3	62	1	2	65	6	3	68	4	2
44	1	2	47	7	2	50	5	1	53	11	0	56	6	3	59	4	2	62	2	1	65	7	2	68	5	1
44	2	1	47	8	1	50	14	0	53	11	11	56	7	2	59	5	1	62	11	0	65	8	1	68	14	0
44	11	0	47	17	0	50	14	11	53	12	10	56	8	1	59	14	0	62	11	11	65	17	0	68	14	11
44	11	11	47	17	11	50	15	10	53	13	9	56	17	0	59	14	11	62	12	10	65	17	11	68	15	10
44	12	10	47	18	10	50	16	9	53	14	8	56	17	11	59	15	10	62	13	9	65	18	10	68	16	9
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45	1	1	48	16	0	51	13	11	54	1	10	57	7	1	60	13	0	63	1	10	66	16	0	69	13	11
45	1	10	48	16	11	51	14	10	54	2	9	57	16	0	60	13	11	63	2	9	66	16	11	69	14	10
45	2	9	48	17	10	51	15	9	54	3	8	57	16	11	60	14	10	63	3	8	66	17	10	69	15	9
45	3	8	48	18	9	51	16	8	54	4	7	57	17	10	60	15	9	63	4	7	66	18	9	69	16	8
45	4	7	48	19	8	51	17	7	54	5	6	57	18	9	60	16	8	63	5	6	66	19	8	69	17	7
45	5	6	49	0	7	51	18	6	54	6	5	57	19	8	60	17	7	63	6	5	67	0	7	69	18	6
45	6	5	49	1	6	51	19	5	54	7	4	58	0	7	60	18	6	63	7	4	67	1	6	69	19	5
45	7	4	49	2	5	52	0	4	54	8	3	58	1	6	60	19	5	63	8	3	67	2	5	70	0	4
45	8	3	49	3	4	52	1	3	54	9	2	58	2	5	61	0	4	63	9	2	67	3	4	70	1	3
45	9	2	49	4	3	52	2	3	54	10	1	58	3	4	61	1	3	63	10	0	67	4	3	70	2	2
45	10	1	49	5	2	52	3	1	55	0	10	58	4	3	61	2	2	63	10	1	67	5	2	70	3	1
46	8	2	49	6	1	52	12	0	55	7	3	58	5	2	61	3	1	64	8	2	67	6	1	70	12	0
46	9	1	49	15	0	52	12	11	55	8	2	58	6	1	61	12	0	64	9	1	67	15	0	70	12	11
46	18	0	49	15	11	52	13	10	55	9	1	58	15	0	61	12	11	64	18	0	67	15	11	70	13	10
46	18	11	49	16	10	52	14	9	55	18	0	58	15	11	61	13	10	64	18	11	67	16	10	70	14	9
46	19	10	49	17	9	52	15	8	55	18	11	58	16	10	61	14	9	64	19	10	67	17	9	70	15	8

70	16	7	74	6	3	77	15	10	80	17	5	84	2	6	87	4	1	90	4	7	94	3	4	97	12	11
70	17	6	74	7	2	77	16	9	80	18	4	84	3	5	87	13	0	90	5	6	94	4	3	97	13	10
70	18	5	74	8	1	77	17	8	80	19	3	84	4	4	87	13	11	90	6	5	94	5	2	97	14	9
70	19	4	74	17	0	77	18	7	81	0	2	84	5	3	87	14	10	90	7	4	94	6	1	97	15	8
71	0	3	74	17	11	77	19	6	81	0	11	84	6	2	87	15	9	90	8	3	94	15	0	97	16	7
71	1	2	74	18	10	78	0	5	81	1	1	84	7	1	87	16	8	90	9	2	94	15	11	97	17	6
71	2	1	74	19	9	78	1	4	81	1	10	84	16	0	87	17	7	90	10	1	94	16	10	97	18	5
71	11	0	75	0	8	78	2	3	81	2	9	84	16	11	87	18	6	91	8	2	94	17	9	97	19	4
71	11	11	75	1	7	78	3	2	81	3	8	84	17	10	87	19	5	91	9	1	94	18	8	98	0	3
71	12	10	75	2	6	78	4	1	81	4	7	84	18	9	88	0	4	91	18	0	94	19	7	98	1	2
71	13	9	75	3	5	78	13	0	81	5	6	84	19	8	88	1	3	91	18	11	95	0	6	98	2	1
71	14	8	75	4	4	78	13	11	81	6	5	85	0	7	88	2	2	91	19	10	95	1	5	98	11	0
71	15	7	75	5	3	78	14	10	81	7	4	85	1	6	88	3	1	92	0	9	95	2	4	98	11	11
71	16	6	75	6	2	78	15	9	81	8	3	85	2	5	88	12	0	92	1	8	95	3	3	98	12	10
71	17	5	75	7	1	78	16	8	81	9	2	85	3	4	88	12	11	92	2	7	95	4	2	98	13	9
71	18	4	75	16	0	78	17	7	81	10	1	85	4	3	88	13	10	92	3	6	95	5	1	98	14	8
71	19	3	75	16	11	78	18	6	82	3	7	85	5	2	88	14	9	92	4	5	95	14	0	98	15	7
72	0	2	75	17	10	78	19	5	82	4	6	85	6	1	88	15	8	92	5	4	95	14	11	98	16	6
72	0	11	75	18	9	79	0	4	82	5	5	85	15	0	88	16	7	92	6	3	95	15	10	98	17	5
72	1	1	75	19	8	79	1	3	82	6	4	85	15	11	88	17	6	92	7	2	95	16	9	98	18	4
72	1	10	76	0	7	79	2	2	82	7	3	85	16	10	88	18	5	92	8	1	95	17	8	98	19	3
72	2	9	76	1	6	79	3	1	82	8	2	85	17	9	88	19	4	92	17	0	95	18	7	99	0	2
72	3	8	76	2	5	79	12	0	82	9	1	85	18	8	89	0	3	92	17	11	95	19	6	99	0	11
72	4	7	76	3	4	79	12	11	82	18	0	85	19	7	89	1	2	92	18	10	96	0	5	99	1	10
72	5	6	76	4	3	79	13	10	82	18	11	86	0	6	89	2	1	92	19	9	96	1	4	99	2	9
72	6	5	76	5	2	79	14	9	82	19	10	86	1	5	89	11	0	93	0	8	96	2	3	99	3	8
72	7	4	76	6	1	79	15	8	83	0	9	86	2	4	89	11	11	93	1	7	96	3	2	99	4	7
72	8	3	76	15	0	79	16	7	83	1	8	86	3	3	89	12	10	93	2	6	96	4	1	99	5	6
72	9	2	76	15	11	79	17	6	83	2	7	86	4	2	89	13	9	93	3	5	96	13	0	99	6	5
72	10	1	76	16	10	79	18	5	83	3	6	86	5	1	89	14	8	93	4	4	96	13	11	99	7	4
73	8	2	76	17	9	79	19	4	83	4	5	86	14	0	89	15	7	93	5	3	96	14	10	99	8	3
73	9	1	76	18	8	80	0	3	83	5	4	86	14	11	89	16	6	93	6	2	96	15	9	99	9	2
73	18	0	76	19	7	80	1	2	83	6	3	86	15	10	89	17	5	93	7	1	96	16	8	99	10	1
73	18	11	77	0	6	80	2	1	83	7	2	86	16	9	89	18	4	93	16	0	96	17	7			
73	19	10	77	1	5	80	11	0	83	8	1	86	17	8	89	19	3	93	16	11	96	18	6			
74	0	9	77	2	4	80	11	11	83	17	0	86	18	7	90	0	2	93	17	10	96	19	5			
74	1	8	77	3	3	80	12	10	83	17	11	86	19	6	90	0	11	93	18	9	97	0	4			
74	2	7	77	4	2	80	13	9	83	18	10	87	0	5	90	1	1	93	19	8	97	1	3			
74	3	6	77	5	1	80	14	8	83	19	9	87	1	4	90	1	10	94	0	7	97	2	2			
74	4	5	77	14	0	80	15	7	84	0	8	87	2	3	90	2	9	94	1	6	97	3	1			
74	5	4	77	14	11	80	16	6	84	1	7	87	3	2	90	3	8	94	2	5	97	12	0			

A further class of differences in balancing caused by advancements, i.e. by their being shifted from right to left in copying, or *vice versa*, is given below. This Table ("B") contains a list of all differences under £100 coming under this category :—

TABLE B.

£	s	d	£	s	d	£	s	d	£	s	d	£	s	d	£	s	d	£	s	d	£	s	d	£	s	d
	19	11	18	19	11	28	2	8	37	5	5	46	15	5	59	14	0	71	12	10	82	0	10	91	3	7
1	19	10	19	0	10	28	3	7	37	6	4	47	15	4	60	13	11	72	19	0	82	1	9	91	4	6
2	19	9	19	1	9	28	4	6	37	7	3	48	15	3	61	13	10	72	19	11	82	2	8	91	5	5
3	19	8	19	2	8	28	5	5	37	16	4	49	15	0	62	13	9	73	0	10	82	3	7	91	6	4
4	19	7	19	3	7	28	6	4	38	16	3	50	14	11	63	13	8	73	1	9	82	4	6	91	7	3
5	19	6	19	4	6	28	7	3	39	16	0	51	14	10	63	19	0	73	2	8	82	5	5	91	10	10
6	19	5	19	5	5	28	17	3	40	15	11	52	14	9	63	19	11	73	3	7	82	6	4	92	10	9
7	19	4	19	6	4	29	17	0	41	15	10	53	14	8	64	0	10	73	4	6	82	7	3	93	10	8
8	19	3	19	7	3	30	16	11	42	15	9	54	19	0	64	1	9	73	5	5	82	11	9	94	10	7
9	19	0	19	18	0	31	16	10	43	15	8	54	19	11	64	2	8	73	6	4	83	11	8	95	10	6
9	19	2	20	17	11	32	16	9	44	15	7	55	0	10	64	3	7	73	7	3	84	11	7	96	10	5
10	18	11	21	17	10	33	16	8	45	15	6	55	1	9	64	4	6	73	12	8	85	11	6	97	10	4
10	19	1	22	17	9	34	16	7	45	19	0	55	2	8	64	5	5	74	12	7	86	11	5	98	10	3
11	18	10	23	17	8	35	16	6	45	19	11	55	3	7	64	6	4	75	12	6	87	11	4	99	19	0
12	18	9	24	17	7	36	16	5	46	0	10	55	4	6	64	7	3	76	12	5	88	11	3	99	19	11
13	18	8	25	17	6	36	19	0	46	1	9	55	5	5	64	13	7	77	12	4	89	11	0			
14	18	7	26	17	5	36	19	11	46	2	8	55	6	4	65	13	6	78	12	3	90	10	11			
15	18	6	27	17	4	37	0	10	46	3	7	55	7	3	66	13	5	79	12	0	90	19	0			
16	18	5	27	19	0	37	1	9	46	4	6	55	14	6	67	13	4	80	11	11	90	19	11			
17	18	4	27	19	11	37	2	8	46	5	5	56	14	5	68	13	3	81	11	10	91	0	10			
18	18	3	28	0	10	37	3	7	46	6	4	57	14	4	69	13	0	81	19	0	91	1	9			
18	19	0	28	1	9	37	4	6	46	7	3	58	14	3	70	12	11	81	19	11	91	2	8			

Rule B.

The difference between this class of error and those included in Table A is that, while the latter arose from the figures being shifted *one* place, the former arise from their being shifted *one or more* places to the right or left. A slight modification of the rule already given is thus required, which will readily be gathered from the following example, viz., a difference of £90 10s. 11d. :—

£	s	d
	9	1
90	**10**	**11**
91	0	0

This shows that £91 entered as 9/1 produces a difference of £90 10s. 11d.

With some of the figures shown in Table B, a slight modification occurs. Thus £1 0s. 10d. may be caused by £1 2s. being entered as 1/2, or by £192 being entered as £190 19s. 2d.—a by no means impossible mistake if the clerk calling out the entries happens to stammer.

A further class of differences in balancing is shown in the following table :—

TABLE C.

Errors £	s	d		£	s	d		s	d	
10	9	11	arises from	11	1	0	being entered as	11	1	and *vice versa*
10	10	10	,,	11	2	0	,,	11	2	
10	11	9	,,	11	3	0	,,	11	3	
10	12	8	,,	11	4	0	,,	11	4	
10	13	7	,,	11	5	0	,,	11	5	
10	14	6	,,	11	6	0	,,	11	6	
10	15	5	,,	11	7	0	,,	11	7	
10	16	4	,,	11	8	0	,,	11	8	
10	17	3	,,	11	9	0	,,	11	9	
10	18	2	,,	11	10	0	,,	11	10	

The following differences arise from a failure to distinguish between the "pounds" and "shillings" columns :—

TABLE D.

£	s	d	£	s	d	£	s	d	£	s	d
	10	0	27	10	0	54	10	0	90	10	0
9	10	0	36	10	0	72	10	0	99	10	0
18	10	0	45	10	0	81	10	0			

The figures in this table possess the peculiarity of each being the result of any one of *nine* possible errors, thus :—

£	s	d		s	d
1	1	0	entered as	11	0
1	2	0	,,	12	0
1	3	0	,,	13	0
1	4	0	,,	14	0
1	5	0	,,	15	0
1	6	0	,,	16	0
1	7	0	,,	17	0
1	8	0	,,	18	0
1	9	0	,,	19	0

and *vice versa* will each produce an error of 10/-.

Rule D.

The rule for discovering the error in these cases is as follows :—

Divide the pounds only by 9, this gives the pounds ; add to this 11 shillings, and the amount so arrived at is one of the sets of figures. The other set is arrived at by taking the 1 away from the tens of shillings and placing it on the right of the units of pounds, which thus becomes tens of pounds.

For example :—Difference £54 10s.

$$54 \div 9 = 6$$

First set of figures	£6	11	0
Second do.	£61	1	0

The same difference (£54 10s.) exists between £6 12s. and £61 2s., and so on up to £6 19s. and £61 9s.

Transpositions.

The various differences that can arise in balancing from a single error in the shifting of figures from right to left, or from left to right, which class of errors have been grouped together under the name of "Advancements," have now been exhaustively dealt with.

Another class (Group II, *vide* page 10) which is perhaps even more frequently experienced, arises from the transposition of figures: as, for example, when 10/9 is copied as 9/10, thereby producing a difference in balancing of 11d. The number of differences resulting from errors of this kind is not large, but in almost every case the same error may be produced by each of several distinct mistakes of transposition, and in this connection the following Table will doubtless be found of value:

TABLE E.

11d.	arising from	1/-	2/1	2/3	4/3	5/4	6/5	7/6	8/7	9/8	10/9	11/10
	entered as	1d.	1/2	3/2	3/4	4/5	5/6	6/7	7/8	8/9	9/10	10/11 and *vice versa*
1/10	arising from	2/-	3/1	4/2	5/3	6/4	7/5	8/6	9/7	10/8	11/9	
	entered as	2d.	1/3	2/4	3/5	4/6	5/7	6/8	7/9	8/10	9/11 and *vice versa*	
2/9	arising from	3/-	4/1	5/2	6/3	7/4	8/5	9/6	10/7	11/8		
	entered as	3d.	1/4	2/5	3/6	4/7	5/8	6/9	7/10	8/11 and *vice versa*		

3/8	arising from	4/-	5/1	6/2	7/3	8/4	9/5	10/6	11/7																	
	entered as	4d.	1/5	2/6	3/7	4/8	5/9	6/10	7/11 and *vice versa*																	
4/7	arising from	5/-	6/1	7/2	8/3	9/4	10/5	11/6																		
	entered as	5d.	1/6	2/7	3/8	4/9	5/10	6/11 and *vice versa*																		
5/6	arising from	6/-	7/1	8/2	9/3	10/4	11/5																			
	entered as	6d.	1/7	2/8	3/9	4/10	5/11 and *vice versa*																			
6/5	arising from	7/-	8/1	9/2	10/3	11/4																				
	entered as	7d.	1/8	2/9	3/10	4/11 and *vice versa*																				
7/4	arising from	8/-	9/1	10/2	11/3																					
	entered as	8d.	1/9	2/10	3/11 and *vice versa*																					
8/3	arising from	9/-	10/1	11/2																						
	entered as	9d.	1/10	2/11 and *vice versa*																						
9/2	arising from	10/-	11/1																							
	entered as	10d.	1/11 and *vice versa*																							
10/1	arising from	11/-																								
	entered as	11d. and *vice versa*																								
19/-	arising from	£1	0	0	£2	1	0	£3	2	0	£4	3	0	£5	4	0	£6	5	0	£7	6	0	£8	7	0	
	entered as		1	0	1	2	0	2	3	0	3	4	0	4	5	0	5	6	0	6	7	0	7	8	0	
	arising from	£9	8	0	£10	9	0																			
	entered as	8	9	0	9	10	0 &c., and *vice versa*																			

TABLE E (*continued*).

£1 18 0	arising from	£2 0 0	£3 1 0	£4 2 0	£5 3 0
	entered as	0 2 0	1 3 0	2 4 0	3 5 0
	arising from	6 4 0	7 5 0	8 6 0	9 7 0
	entered as	4 6 0	5 7 0	6 8 0	7 9 0
	arising from	10 8 0	11 9 0		
	entered as	8 10 0	9 11 0 &c., and *vice versa*		
£2 17 0	arising from	£3 0 0	£4 1 0	£5 2 0	£6 3 0
	entered as	0 3 0	1 4 0	2 5 0	3 6 0
	arising from	7 4 0	8 5 0	9 6 0	10 7 0
	entered as	4 7 0	5 8 0	6 9 0	7 10 0
	arising from	11 8 0	12 9 0		
	entered as	8 11 0	9 12 0 &c., and *vice versa*		
£3 16 0	arising from	£4 0 0	£5 1 0	£6 2 0	£7 3 0
	entered as	0 4 0	1 5 0	2 6 0	3 7 0
	arising from	8 4 0	9 5 0	10 6 0	11 7 0
	entered as	4 8 0	5 9 0	6 10 0	7 11 0
	arising from	12 8 0	13 9 0		
	entered as	8 12 0	9 13 0 &c., and *vice versa*		
£4 15 0	arising from	£5 0 0	£6 1 0	£7 2 0	£8 3 0
	entered as	0 5 0	1 6 0	2 7 0	3 8 0
	arising from	9 4 0	10 5 0	11 6 0	12 7 0
	entered as	4 9 0	5 10 0	6 11 0	7 12 0
	arising from	13 8 0	14 9 0		
	entered as	8 13 0	9 14 0 &c., and *vice versa*		

£5 14 0	arising from	£6 0 0	£7 1 0	£8 2 0	£9 3 0
	entered as	0 6 0	1 7 0	2 8 0	3 9 0
	arising from	10 4 0	11 5 0	12 6 0	13 7 0
	entered as	4 10 0	5 11 0	6 12 0	7 13 0
	arising from	14 8 0	15 9 0		
	entered as	8 14 0	9 15 0 &c., and *vice versa*		
£6 13 0	arising from	£7 0 0	£8 1 0	£9 2 0	£10 3 0
	entered as	0 7 0	1 8 0	2 9 0	3 10 0
	arising from	11 4 0	12 5 0	13 6 0	14 7 0
	entered as	4 11 0	5 12 0	6 13 0	7 14 0
	arising from	15 8 0	16 9 0		
	entered as	8 15 0	9 16 0 &c., and *vice versa*		
£7 12 0	arising from	£8 0 0	£9 1 0	£10 2 0	£11 3 0
	entered as	0 8 0	1 9 0	2 10 0	3 11 0
	arising from	12 4 0	13 5 0	14 6 0	15 7 0
	entered as	4 12 0	5 13 0	6 14 0	7 15 0
	arising from	16 8 0	17 9 0		
	entered as	8 16 0	9 17 0 &c., and *vice versa*		
£8 11 0	arising from	£9 0 0	£10 1 0	£11 2 0	£12 3 0
	entered as	0 9 0	1 10 0	2 11 0	3 12 0
	arising from	13 4 0	14 5 0	15 6 0	16 7 0
	entered as	4 13 0	5 14 0	6 15 0	7 16 0
	arising from	17 8 0	18 9 0	19 10 0	
	entered as	8 17 0	9 18 0	10 19 0 and *vice versa*	

TABLE E (*continued*).

£9 0 0	arising from	£10	£21	£32	£43	£54	£65	£76
	entered as	01	12	23	34	45	56	67
	arising from	87	98					
	entered as	78	89 and *vice versa*					
£9 10 0	arising from	£10 0 0	£11 1 0	£12 2 0	£13 3 0			
	entered as	0 10 0	1 11 0	2 12 0	3 13 0			
	arising from	14 4 0	15 5 0	16 6 0	17 7 0			
	entered as	4 14 0	5 15 0	6 16 0	7 17 0			
	arising from	18 8 0	19 9 0					
	entered as	8 18 0	9 19 0 and *vice versa*					
£10 9 0	arising from	£11 0 0	£12 1 0	£13 2 0	£14 3 0			
	entered as	0 11 0	1 12 0	2 13 0	3 14 0			
	arising from	15 4 0	16 5 0	17 6 0	18 7 0			
	entered as	4 15 0	5 16 0	6 17 0	7 18 0			
	arising from	19 8 0						
	entered as	8 19 0 and *vice versa*						
£11 8 0	arising from	£12 0 0	£13 1 0	£14 2 0	£15 3 0			
	entered as	0 12 0	1 13 0	2 14 0	3 15 0			
	arising from	16 4 0	17 5 0	18 6 0	19 7 0			
	entered as	4 16 0	5 17 0	6 18 0	7 19 0 and *vice versa*			
£12 7 0	arising from	£13 0 0	£14 1 0	£15 2 0	£16 3 0			
	entered as	0 13 0	1 14 0	2 15 0	3 16 0			
	arising from	17 4 0	18 5 0	19 6 0				
	entered as	4 17 0	5 18 0	6 19 0 and *vice versa*				

£13 6 0	arising from	£14 0 0	£15 1 0	£16 2 0	£17 3 0		
	entered as	0 14 0	1 15 0	2 16 0	3 17 0		
	arising from	18 14 0	19 15 0				
	entered as	4 18 0	5 19 0	and *vice versa*			
£14 5 0	arising from	£15 0 0	£16 1 0	£17 2 0	£18 3 0		
	entered as	0 15 0	1 16 0	2 17 0	3 18 0		
	arising from	19 4 0					
	entered as	4 19 0	and *vice versa*				
£15 4 0	arising from	£16 0 0	£17 1 0	£18 2 0	£19 3 0		
	entered as	0 16 0	1 17 0	2 18 0	3 19 0	and *vice versa*	
£16 3 0	arising from	£17 0 0	£18 1 0	£19 2 0			
	entered as	0 17 0	1 18 0	2 19 0	and *vice versa*		
£17 2 0	arising from	£18 0 0	£19 1 0				
	entered as	0 18 0	1 19 0	and *vice versa*			
£18 0 0	arising from	£20 0 0	£31 0 0	£42 0 0	£53 0 0		
	entered as	2 0 0	13 0 0	24 0 0	35 0 0		
	arising from	64 0 0	75 0 0	86 0 0	97 0 0		
	entered as	46 0 0	57 0 0	68 0 0	79 0 0	and *vice versa*	
£18 1 0	arising from	£19 0 0					
	entered as	0 19 0	and *vice versa*				

TABLE E (*continued*),

£27	**0**	**0**	arising from	£30	0	0	£41	0	0	£52	0	0	£63	0	0			
			entered as	3	0	0	14	0	0	25	0	0	36	0	0			
			arising from	74	0	0	85	0	0	96	0	0						
			entered as	47	0	0	58	0	0	69	0	0	and *vice versa*					
£36	**0**	**0**	arising from	£40	0	0	£51	0	0	£62	0	0	£73	0	0			
			entered as	4	0	0	15	0	0	26	0	0	37	0	0			
			arising from	84	0	0	95	0	0									
			entered as	48	0	0	59	0	0	and *vice versa*								
£45	**0**	**0**	arising from	£50	0	0	£61	0	0	£72	0	0	£83	0	0			
			entered as	5	0	0	16	0	0	27	0	0	38	0	0			
			arising from	94	0	0												
			entered as	49	0	0	and *vice versa*											
£54	**0**	**0**	arising from	£60	0	0	£71	0	0	£82	0	0	£93	0	0			
			entered as	6	0	0	17	0	0	28	0	0	39	0	0	and *vice versa*		
£63	**0**	**0**	arising from	£70	0	0	£81	0	0	£92	0	0						
			entered as	7	0	0	18	0	0	29	0	0	and *vice versa*					
£72	**0**	**0**	arising from	£80	0	0	£91	0	0									
			entered as	8	0	0	19	0	0	and *vice versa*								
£81	**0**	**0**	arising from	£90	0	0												
			entered as	9	0	0	and *vice versa*											
£99	**0**	**0**	arising from	£100	0	0												
			entered as	1	0	0	and *vice versa*											

Errors of £100 and upwards.

With errors resulting in a difference of £100 or upwards, the following rules apply. Cut off the figure representing the hundreds of pounds, and add that figure to the units of pounds, thus :—

Error, £295 0s. 4d.

Cut off the hundreds, leaves ..	£95	0	4
Add the figure cut off to the units of pounds	2	0	0
which gives a total of.. ..	£97	0	4

Then search the tables already given for an error of £97 0s. 4d. The amount will be found in Table A : the rule given for Table A will therefore apply also to an error of £295 0s. 4d., and by applying this rule it will be found that the difference of £295 0s. 4d. results from the writing of £327 8s. 0d. as £32 7s. 8d., or *vice versa*.

Errors of £1,000 and upwards.

When the error runs into thousands of pounds, then *all the figures except the tens and units* must be

cut off, and the process repeated until a figure of less than £100 is arrived at, which figure will give the key to the table (if any) under which the error is to be classed. Thus :—

Error, £11,414 17s. 0d.

Cut off first three figures, leaves ..	£14	17	0
Add the figures cut off	114	0	0
which gives a figure ..	£128	17	0

This figure being over £100, proceed again to cut off the first figure, leaving .. £28 17 0

Add the figure cut off	1	0	0
which gives	£29	17	0

The difference of £29 17s. 0d. is to be found under Table B; the error of £11,414 17s. 0d. is therefore subject to the same rules, and by applying them it will be found that it results from the writing of £12,683 0s. 0d., instead of £1,268 3s. 0d., or *vice versa*.

As a rule, of course, large differences can at once be localised without trouble, on account of the inherent improbability of some balance or item.

Transpositions of Three Figures.

All errors of transpositions of three figures will esult in differences of either £99, £198, £297, £396, £495, £594, £693, £792, or £891. The figures of the *unit* and *hundred* will correspond with those of the *unit* and *ten* in Table E, while the middle figure, the *ten* (not being affected by the transposition), may be anything from 0 to 9.

Example.

To make this clearer, take the case of £297 : refer to £27 in Table E, and extend thus :—

£297	arising from	£300	entered as	£003
	,,	310	,,	013
	,,	320	,,	023
	and so on up to	390	,,	093
Also	arising from	£401	entered as	£104
	,,	411	,,	114
	and so on up to	491	,,	194

&c., &c., there being for each figure *nine times* as many combinations as with transpositions of two figures only.